No.



9900232

# THE UNITED SHATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME;

# Mestern Plant Breeders

There has been presented to the

#### Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, R CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN DUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY SECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEO.)

#### WHEAT, COMMON

'Conan'

In Jestimone Thereof, I have hereunto set my hand and caused the seal of the Hunt Inviter Frotestion Office to be affixed at the City of Washington, D.C. this thirty-first day of January, in the year of our Lord two thousand.

Attest:

Aun name that

Commissioner Plant Variety Protection Office Agricultural Marketing Service

par Mulineur

vy of Agriculture

General Manager

(See reverse for instructions and information collection burden statement)

Barley and Wheat Breeder

### "CONAN"

(Exp. # BZ 992-588)

## 16. a. Exhibit A. Origin and Breeding History

"Conan" (Exp. # BZ 992-588) originated from the cross of Rambo X WestBred 906R, made near Phoenix, AZ in March, 1990. The F1 plants were grown near Bozeman, MT during the summer of 1990 and the F2 seed harvested in September, 1990. The F2 seed was planted near Phoenix in Nov. 1990 and single F2 heads were harvested in late April, 1991. F3 head rows were planted in May 1991 near Bozeman. Single heads were selected from desirable rows in the fall of 1991. F4 head rows were planted in April, 1992. Agronomically acceptable F4 rows were selected and this particular row was given the designation BZ 992-588. Protein and protein quality (the SDS sedimentation test) analysis were conducted on the selected lines prior to advancing to yield trials. Yield trials were conducted on the F5 through F10 generations near Bozeman and near Conrad, MT, where it was possible to screen for resistance to the wheat stem sawfly and the wheat streak mosaic virus. End use quality data (Table 3) and agronomic data (Tables 1 and 2) were gathered from through out the state of Montana on the F8 through F10 generations.

F5 heads were selected from plots grown near Bozeman and planted as head rows near Phoenix in Nov. 1993. F6 rows were harvested individually in late April, 1994 and F7 seed from these were planted in 5'x17' plots near Bozeman in May, 1994. F8 seed was harvested from these plots and evaluated for protein quality. F9 seed of selected plots were planted in May, 1995 to increase seed of the selected lines. Uniform increases were harvested and bulked. This F10 seed was planted in May 1996 to produce Breeder's seed. The Breeder's seed was planted on approximately four acres near Bozeman in May 1997 to produce Foundation seed. Foundation seed was planted in the spring of 1998 to produce Registered and Certified seed. Certified seed will first be sold to growers in the spring of 1999.

A variant that is similar to Conan, but is 4 to 8 inches taller, occurs at a frequency of up to .08% (8 per 10,000 plants). Otherwise, Conan is a stable and uniform variety in agronomic appearance and performance across several generations (F6 to F10) and growing conditions.

## 16. b. Exhibit B. Statement of Distinctness

Conan is most similar to the variety WestBred 906R. However, the glumes of Conan have square shoulders while WestBred 906R have elevated ones. Also, the seed of Conan is elliptical with a long, collard brush, while WestBred 906R's seed is ovate with a medium length, non-collared brush. And Conan is tolerant to the wheat stem sawfly whereas WestBred 906R is not.

The above comparisons along with the complete objective description, (Exhibit C) show Conan to be a novel variety of hard red spring wheat.

#### U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE SCIENCE DIVISION BELTSVILLE, MARYLAND 20705

# OBJECTIVE DESCRIPTION OF VARIETY

WHEAT (Triticum spp.)

NAME OF APPLICANT(S)		
	FOR OFFIC	CIAL USE ONLY
Western Plant Breeders, Inc  ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code)	PVPO NUMBER	9900232
8111 Timberline Drive	VARIETY NAME	
Bozeman, MT 59718-8184	Conan	
	TEMPORARY OR EX DESIGNATION	PERIMENTAL
	BZ 992-58	8
PLEASE READ ALL INSTRUCTIONS CAREFULLY: Place the appropriate number that describes the varietal of Place a zero in the first box (e.g or) when number is either 99 or less or 9 or less respectively. Da on a minimum of 100 plants. Comparative data should be determined from varieties entered in the same trial. Roy standard may be used to determine plant colors; designate system used: Please answer all questions for your variety; lack of response may delay progress of your app 1. KIND:	al Horticultural Society o	the boxes below. characters should be base or any recognized color
1=Common 2=Durum 3=Club 4=Other (SPECIFY)  2. VERNALIZATION:		
1=Spring 2=Winter 3=Other (SPECIFY)		
3. COLEOPTILE ANTHOCYANIN:		
I=Absent 2=Present		
. JUVENILE PLANT GROWTH:		
I=Prostrate 2=Semi-erect 3=Erect		
PLANT COLOR (boot stage):	<del> </del>	
1 = Yellow-Green 2 = Green 3 = Blue-Green		
FLAG LEAF (boot stage):		
2	= Not Twisted	2 = Twisted
EAR EMERGENCE:		
O 2 Number of Days Earlier Than Mc Neal		*
Number of Days Later Than West Bred 936		*
ANTHER COLOR:		
1 = YELLOW 2 = PURPLE	e e e e e e e e e e e e e e e e e e e	
PLANT HEIGHT (from soil to top of head, excluding awns):		
10 cm Taller Than West Bred 936		*
15 cm Shorter Than Amidon		*
	_	Ц

10. STEM:	
A. ANTHOCYANIN	Exhibit C (Wheat)
2 I= Absent 2=Present	9900232
B. WAXY BLOOM  1=Absent 2=Present	
C. HAIRINESS (last internode of rachis)  2 I=Absent 2=Present	
D. INTERNODE (SPECIFY NUMBER)  1=Hollow 2=Semi-solid 3=Solid	
E. PEDUNCLE 2=Present	
45 cm Length	
11. HEAD (at Maturity):	
A. DENSITY	
2 I=Lax 2=Middense 3= Dense	
B. SHAPE	
2 1 = Tapering 2= Strap 3 = Clavate	4 = Other (SPECIFY)
C. CURVATURE	
1 = Erect 2 = Inclined 3 = Recurved	
D. AWNEDNESS	
$1 = Awnless \qquad 2 = Apically Awnletted \qquad 3 =$	Awnletted 4 = Awned
12. GLUMES (at Maturity):	Awnletted 4 = Awned
A. COLOR	
1 = White   2 = Tan   3 = Other (SPECIFY)	)
B. SHOULDER	
1 = Wanting 2 = Oblique 3 = Rounded	4 = Square 5 = Elevated 6 = Apiculate
CBEAK	- Apiculate
3 1 = Obtuse 2 = Acute 3 = Acuminate	
D. LENGTH	
3 1 = Short (ca. 7mm) 2 = Medium (ca. 8mm)	3 = Long (ca. 9mm)
E. WIDTH	
1 = Narrow (ca. 3mm) 2 = Medium (ca. 3.5mm)	3 = Wide (ca. 4mm)
13. SEED:	
A. SHAPE  1 = Ovate 2 = Oval 3 = Elliptical	
B. CHEEK	
I=Rounded 2=Angular	
C. BRUSH	
3 1=Short 2=Medium 3=Long	$2 \qquad 1 = \text{Not Collared} \qquad 2 = \text{Collared}$
D. CREASE	Z - Condicu
2 1 = Width 60% or less of Kernel	I - Devat cons
2 = Width 80% or less of Kernel 3 = Width Nearly as Wide as Kernel	1 = Depth 20% or less of Kernel 2 = Depth 35% or less of Kernel 3 = Depth 50% or less of Kernel

IS. INSECT: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

# PLEASE SPECIFY BIOTYPE (where needed)

	= ( "instellicuted)	
Hessian Fly (Mayetiola destructor)		
(Mayation destructor)	Other (CDECTER)	-
2 Prevalent in Washington State	Other (SPECIFY)	
The party was now state	_	
	[0]	
Stem Sawfly (Cephus spp.)		
2 Prevalent	Other (SPECIFY)	•
Z TVEVAIENT		
~	0	
Cereal Leaf Beetle (Oulema melanopa)		
(памиора)	Other (SPECIFY)	
	(	<del></del>
	0	
Russian Aphid (Diuraphis noxia)		
(=p.n.s noxin)	Other (SPECIFY)	
0	(Cruch 1)	<del></del> -
	101	
Greenbug (Schizaphis graminum)	0	<del></del>
(ochaapna grammum)		
- 101	Other (SPECIFY)	
Aphids		<u> </u>
	OAL COMPANY	<del></del>
	Other (SPECIFY)	•
DITIONAL INFORMATION ON ANY ITEM AROV		
	/F OD CENTER (*	

Table 1. Agronomic data comparing Conan with check varieties in the Montana State University Intrastate Yield Trials in 1995, 1996, and 1997.

		avg	22	52	5.1	56	61	77.	63	20 00	61	58	6	64	59	59	58	9	
	٠	76	53	53	54	55	61	57	. 20	90	09	56	61	49	22	58	57	22	
	Yield (bu/ac)	98	53	48	52	2	55	54	09	56	56	56	56	28	26	57	55	28	
		8	64	56	57	62	89	63	202		29	63	65	70	65	62	63	65	
		 	. 0	œ	. —	œ	8	4	· ∞	9	4	,	0	0	<del>,</del>	4	ෆ	<sub>∞</sub>	
		avg	14.0	13.	4	13	. 43	4	13	4.	4.	13.1	14	4	4.	4.	14	13.8	
		37	14.2	13.6	14.2	13.8	13.3	14.6	13.9	14.2	14.6	13.3	14.3	14.1	14.3	14.6	14.3	13.8	
	Protein %	96	14.5	14.7	14.4	14.5	13.8	14.9	14.4	15.0	14.9	13.5	14.8	14.6	14.6	15.1	15.0	14.4	
		35	13.2									12.5					13.7	13.4	
		avg	61	59	61	62	90	9	9	6	61	59	6	99	61	09	9	09	
		26	6	90	61	65	09	90	61	61	61	29		90	61	09	90	29	
	T.W. (lbs/bu)	98	61	59	62	61	09	09	61	61	61	90	09	9	61	09	9	09	
	<b>⊢</b> ∈	<u>8</u>	09	59	9	61	29	9	9		61	28	61	9	61	09	29	29	
ations		avg	30	39	36	36	30	31	36	36	36	31	28	32	59	59	26	56	
7 locat			78		36		58		36		34		28		59	•	26		
y of 2	નt. es)	26 9	29 2	36 3			28 2	30 3			35 3		28 2	30 3	28 2		26 2		
Summary of 27 loc	Pit. Ht. (inches)	<u> 36</u>	31 2	42 3			32	32 3		כי)	98 98		30 2				27 2		
Ō		Oil	(-)	7	(,)	(.)	(,)	(1)	(-)			(,)	(,	(-)	(,)	(·)	C	CQ.	
Heading Date		avg	181	183	181	184	184	182	182	182	181	182	180	183	180	178	179	181	
	ite	<u>76</u>	181	183	180	184	184	182	181	180	181	182	178	182	179	177	178	181	
	fing Da	<u>96</u>	182	185	183	185	185	183	182	183	183	184	182	184	181	180	180	182	
	Heading from 1/1	윙	180	183	180	184	183	181	181		180	182	179	182	179	177	178	181	:
	ļ															i			
	Variety		Conan*	Thatcher	Fortuna*	Lew*	Newana	Len	Amidon*	Trenton	Ernest*	Glenman*	Hi-Line	McNeal	Fergus	WB 926	WB 936	Express	;

\* = Sawfly tolerant varieties

Table 2. Disease and stem solidness data comparing Conan to check varieties in Montana State University trials in 1995 and 1997.

							1995 Disease Rating						
	Soli	Stem <u>Solidness*</u> 5 - 25		Leaf <u>Rust</u> 0-5	Havre	Septo Kalispe	ria ell Conrad		Tan spot Sidney-dry Sidney-ir				
	<u>95</u>	97	97	97									
Conan	12.1	11.6	1.0	1.0	L-M	L	M	· L	L				
Thatcher	7.0	10.1	4.0	3.5	L-M	L	L j	L-M	0-L				
Fortuna	20.3	20.3	3.5	3.0	М-Н	М-Н	L-M	М	· .L				
Lew	17.0	14.9	1.5	3.5	L-M	L-M	L-M	H .	L-M				
Newana	8.2	7.5	2.5	2.0	М	L .	L .	M	L-M				
Len	7.0	9.3	2.0	1.0	L	L-M	M	. L-M	. 0 .				
Amidon	16.0	16.9	2.0	1.0	L	. L	L	L-M	, L				
Trenton	8.4	9.2	4.0	1.0	L	L	L .	L	L				
Ernest	19.2	16.6	4.5	1.5	L	L	. <b>L</b>	L	0-L				
Glenman	14.2	19.3	2.0	3.0	L-M	L-M	L-M	L-M	0				
Hi-Line	8.2	7.4	2.0	2.0	L-ivi M	H-IVI	L-M	L-M	L				
McNeal	7.5	8.0	3.0	3.5	L L	L	L1VI	L-101	0				
Fergus	10.3	9.0	2.5	2.0	M-H	Н	M	M	0-L				
WB 926	8.3	8.7	1.0	2.0	М	М	М	L.	·M				
WB 936	9.5	9.2	1.0	3.0	M	L-M	L-M	L-M	L-M				
Express	9.5	9.1	1.0	1.0	M	L-M	L	Ĺ	L				

<sup>\* 5</sup> points given for each internode that is solid

Table 3. Quality data for "Conan" hard red spring wheat in Montana State
University Intrastate Spring Wheat Yield Trials in 1995, 1996 and 1997.

### 1995 average of 5 locations

	F	Flour	Mixograph			Baking Data			
	Protein	Yield	Abs			Abs	Loaf Vol	Bake	
<u>Variety</u>	<u>%</u>	<u>%</u>	<u>%</u>	min.	<u>Tol</u>	<u>%</u>	CC	min.	<u>CG</u>
Conan	12.1	70.0	64.9	3.6	2.8	78.1	982	6.1	2.6
Newana	11.8	69.0	63.1	2.4	2.4	76.0	1016	4.3	2.8
Fortuna	12.6	73.8	64.5	2.4	2.0	74.4	988	3.5	2.8
Lew	12.7	73.0	65.0	3.5	3.4	77.3	1018	6.4	3.0
Amidon	12.3	71.4	64.5	3.0	2.4	74.4	958	4.0	2.2
Hi-Line	12.2	70.0	64.6	3.6	3.6	80.3	1025	9.1	2.8
McNeal	12.2	69.8	64.3	3.7	3.8	81.7	985	9.1	2.0

### 1996 average of 3 locations

•	F	lour	Ŋ	/ //ixograp	h		Baking Data		
<u>Variety</u>	Protein	Yield	Abs			Abs	Loaf Vol	Bake	
	<u>%</u>	<u>%</u>	<u>%</u>	min.	<u>Tol</u>	<u>%</u>	<u>cc</u>	<u>min.</u>	<u>CG</u>
Conan	12.9	65.1	71.8	7.6	5.0	91.2	1153	20.0	•
Newana	12.0	63.7	70.0	3.8	2.5	86.6	1080	9.3	
Fortuna	12.8	69.6	71.3	3.8	2.5	87.1	973	9.0	
Lew	13.2	68.4	73.3	6.7	4.0	89.1	1073	25.5	
Amidon	12.9	68.9	72.7	4.4	3.6	86.6	1077	12.6	
Hi-Line	13.1	62.9	72.8	8.0	5.3	94.2	1040	24.9	
McNeal	12.9	64.2	72.4	8.6	5.3	93.6	1095	31.2	

### 1997 average of 5 locations

	· . F	lour		Mixograph			Baking Data			
	Protein	Yield	Abs			Abs	Loaf Vol	Bake		
<u>Variety</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>min.</u>	<u>Tol</u>	<u>%</u>	<u>cc</u>	min.	<u>CG</u>	
Conan	12.2	64.4	65.8	5.6	5	74.5	1163	7.6	2	
Newana	11.7	63.2	64.7	3.4	3	70.9	1151	3.6	2	
Fortuna	13.0	68.2	67.1	3.2	3	72.9	1117	3.4	3	
Lew	12.7	67.9	65.8	4.8	5	73.0	1170	5.6	3	
Amidon	12.5	67.8	66.4	3.4	4	71.9	1097	3.6	2	
Hi-Line	13.0	61.9	67.1	5.5	6	75.3	1215	9.0	2	
McNeal	12.5	63.9	66.3	5.8	5	75.5	1142	7.4	3	

REPRODUCE LUCALLY. Include form number and date on all reproductions.	FORM APPROVED - OMB N						
U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE	The following statements are made 1974 (5 U.S.C. 552a) and the Pap	le in accordance with the Privacy Act of erwork Reduction Act (PRA) of 1995 .					
SCIENCE AND TECHNOLOGY DIVISION - PLANT VARIETY PROTECTION OFFICE  EXHIBIT E  STATEMENT OF THE BASIS OF OWNERSHIP	Application is required in order to determine if a plant variety pro- certificate is to be issued (7 U.S.C. 2421). Information is held conf- until certificate is issued (7 U.S.C. 2426).						
1. NAME OF APPLICANT(S)	2. TEMPORARY DESIGNATION	3. VARIETY NAME					
Wortorn Dlant Broodens Torn	OR EXPERIMENTAL NUMBER						
Western Plant Breeders, Inc.	BZ 992-588	Conan					
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)	S. THE FOLIANCE						
8111 Timberline Drive	5. TELEPHONE (include area code)	6. FAX (include area code)					
Bozeman, MT 59718-8184	7. PVPO NUMBER	9900232					
	·						
8. Does the applicant own all rights to the variety? Mark an "X" in appropriate to	block. If no, please explain.	X YES NO					
Is the applicant (individual or company) a U.S. national or U.S. based company     If no, give name of country	y?	X YES NO					
		· · · · · · · · · · · · · · · · · · ·					
10. Is the applicant the original breeder? If no, please answer the following:		$oxed{\mathbb{Z}}$ yes $oxed{NO}$ no					
<ul> <li>a. If original rights to variety were owned by individual(s):</li> <li>ls (are) the original breeder(s) a U.S. national(s)? If no, give name of c</li> </ul>	country						
b. If original rights to variety were owned by a company:		YES NO					
Is the original breeder(s) U.S. based company? If no, give name of co	untry						
11. Additional explantion on ownership (If needed, use reverse for extra space):							
		•					
		•					
PLEASE NOTE:	· · · · · · · · · · · · · · · · · · ·	·					
Plant variety protection can be afforded only to owners (not licensees) who meet o	one of the following criteria:						
1. If the rights to the variety are owned by the original breeder, that person must of a country which affords similar protection to nationals of the U.S. for the sai	be a U.S. national, national of a me genus and species.	UPOV member country, or national					
<ol><li>If the rights to the variety are owned by the company which employed the orig nationals of a UPOV member country, or owned by nationals of a country which genus and species.</li></ol>	inal breeder(s), the company mus n affords similar protection to nati	t be U.S. based, owned by conals of the U.S. for the same					
3. If the applicant is an owner who is not the original breeder, both the original breeder.	eeder and the applicant must mee	et one of the above criteria.					
The original breeder may be the individual or company who directed final breed definition.	ling. See Section 41(a)(2) of the	ne Plant Variety Protection Act for					
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